CESWG-PE-P 15 September 1998

SECTION 905(B) (WRDA 86) ANALYSIS
SABINE-NECHES WATERWAY, TEXAS

1. STUDY AUTHORITY: This study is authorized by the Senate Committee on Environment and Public Works Resolution adopted 5 June 1997 which reads:

> That the Secretary shall review his previous reports on the Sabine-Neches Waterway published as Senate Document No. 80, 83rd Congress, Second Session; House Document No. 553, 87th Congress, Second Session; and other pertinent reports to determine the feasibility of modifying the channels serving the Ports of Beaumont, Port Arthur, and Orange, Texas in the interests of commercial navigation.

The District received $100,000 in Fiscal Year 1998 to conduct the reconnaissance phase.

2. STUDY PURPOSE: The purpose of this study is to determine the need for Federal navigation improvements for the Sabine-Neches Waterway, Texas. The study will also investigate opportunities for ecosystem restoration, including beneficial use of dredged material.

3. LOCATION OF PROJECT/CONGRESSIONAL DISTRICT: The Sabine-Neches Waterway, Texas project is located (see Figure 1) in the vicinities of Beaumont, Port Arthur, Orange, and Sabine Pass in Jefferson and Orange Counties, Texas, and Cameron and Calcasieu Parishes, Louisiana. The Sabine-Neches Waterway is a 75 mile-long deep draft channel which extends from the 42-foot contour in the Gulf of Mexico through a jettied Channel to Port Arthur, to Beaumont via the Neches River Channel and to Orange via the Sabine River Channel.

The study area is located in the jurisdiction of the following legislators:

US Senator Phil Gramm (R)
US Senator Kay Bailey Hutchinson (R)
US Representative, 2nd District - Jim Turner (D)
US Representative, 9th District - Nick Lampson (D)

4. DISCUSSION OF PRIOR STUDIES, REPORTS, AND EXISTING WATER PROJECTS: A Draft Feasibility Report was completed on the Sabine-Neches Canal, and the lower 12 miles of the Neches River Channel. The plan also included widening of the Sabine-Neches Canal, located adjacent to Port Arthur, from 400 feet to 500 feet to reduce traffic congestion and delays in this reach of the waterway which also serves as part of the Gulf Intracoastal Waterway (GIIW). The selected plan was not implemented because the local sponsor withdrew their support of the project.

A Reconnaissance Report was completed on the Channel to Orange in February 1994. The report showed a need and opportunity to increase the efficiency of the Channel to Orange by increasing the channel depth from 30 to 35 feet. However, the benefits were considered too speculative to warrant moving into feasibility phase.

5. PLAN FORMULATION

a. Identified Problems:

(1) Existing Conditions: The existing 40-foot channel to Port Arthur and Beaumont was designed to efficiently and safely accommodate vessels of approximately 40,000 DWT with drafts of 36 feet. Since the authorization of the existing project, the size and draft of vessels calling on the Sabine-Neches Waterway have significantly increased to meet the competitive demand for more efficient movements of bulk commodities, particularly crude petroleum. Tankers loaded to depths greater than the designed safe operation depth of 36 feet frequently transit the waterway to industrial sites at Port Arthur and Beaumont. These vessels include tankers with deadweight tonnages ranging in size from 67,000 to 150,000 tons. Over 30% of 1996 to 1997 deep draft vessel trips consisted of vessels with beams of over 130 feet, lengths of 800 feet or more, and fully-loaded drafts in excess of 50 feet, which move on the waterway light-loaded.

Congested traffic conditions are a major problem, especially in the Sabine-Neches Canal because it also serves the through traffic of the GIIW. The larger volume of barges and shallow-draft vessels in this reach of the waterway in addition to the deep-draft traffic moving to or from Port Arthur, Beaumont, and Orange, greatly compound safety problems, and make maneuvering extremely complicated.

Relatively narrow channel widths and the lack of passing areas to accommodate movement of commerce, particularly crude petroleum, will experience a gradual loss of efficiency and could result in local industry losing some comparability with those in other ports along the Gulf Coast.

The number of vessels constrained by the dimensions of Sabine-Neches Waterway is expected to increase because of other ports that already have deeper and wider channels. The transport of commodities is expected to increase mainly due to the increase in crude petroleum from Mexico and South America. Without the increase of

channel depths and widths to accommodate the increased commodity transport more vessels will need to make lighter drafting trips.

(3) Concise Statements of Specific Problems and Opportunities: The major problem on the Sabine-Neches Waterway is the inefficient movement of bulk commodities by vessels which are forced to light load their cargo and/or delays in transversing the waterway. Other water resource problems and needs relate to the safety of the waterway, traffic delays, environmental quality, severe bank erosion along the Port Arthur Canal, preservation of critical fish and wildlife habitat in adjacent areas, availability of environmentally acceptable placement areas, and concerns of limited economic growth.

b. Alternative plans:

The likely alternative plans to be studied in the feasibility phase consist of the following depth and width combinations:

- Deepen the channel to 47 feet deep at the Gulf Entrance and 45 feet on the Sabine Pass Channel, Port Arthur Canal, Sabine-Neches Canal, and the Neches River Channel;
- Deepen the same reach described above to 52 feet at the Gulf and 50 feet for the inland channels;
- Widen the Sabine-Neches Canal and the Neches River Channel from 400 feet to at least 500 feet;
- Deepen the Channel to Orange to 35 feet;
- Widen the Channel to Orange to 300 feet.

c. Evaluation of alternatives:

The alternative analyzed is a channel 47 feet deep at the Gulf Entrance and a channel 45 feet deep on the Sabine Pass Channel, Port Arthur Canal, Sabine-Neches Canal from 400 feet to 500 feet. The widening of the Neches River Channel was not considered in this evaluation. The Sabine Pilots Association has stated that widening this portion of the waterway would not lift the one way traffic restriction on this portion of the waterway. Their concern is with the docks and ships that are berthed along this reach. The force created by two tankers passing each other could pull a vessel into the channel and/or damage the docks.

The benefits attributable to project improvements were estimated based on recent historical tonnage levels and the current fleet of vessels using the waterway. In addition, published forecasts for the major commodity groups were reviewed to identify general long-term trends for deep-draft movements to the U.S. Gulf Coast ports. Crude petroleum imports currently comprise about 80 percent of the deep-draft tonnage total. The reconnaissance level benefits for deepening the channels to Port Arthur and Beaumont were calculated using 1996 and 2010 tonnage levels. The forecasted trade route and shipment distributions used to calculate the 1996 and 2010 crude petroleum

benefit estimates reflect a larger percentage of shipments from Mexico and South America and a higher percentage of lightering, lightening, and transhipping than the 1996 Port Arthur and Beaumont records did. Therefore, the benefit estimates reflect a more conservative estimation of the transportation savings than would have been obtained from direct application of the 1996 port specific distributions. It should be noted that the deepening benefits do not reflect consideration of depth constraints at the foreign ports of origin or destination; however, benefits were only calculated for tonnages which are currently shipped in vessels with design drafts of 40 feet or more.

The benefits for widening the Sabine-Neches Canal from 400 to 500 feet were estimated utilizing 1996 and 1997 transit records obtained from the Sabine Pilots Association and the 1996 annual trip statistics from ocean going vessels derived from the Waterborne Commerce of the U.S. Presently, the Pilots guidelines only allow for daylight traffic and do not permit meetings between vessels with combined beam widths in excess of 200 feet to meet in the Sabine-Neches Canal. Vessels with combined beams greater than 200 feet are allowed to meet during daylight hours in the portions of the waterway which are at least 500 feet wide. The Pilots said that widening of the 12-mile long

Sabine-Neches Canal from 400 feet to 500 feet would not result in a change in the daylight only limitations. The "with project" condition was, therefore, calculated based on a scenario which, all things being equal, would allow unrestricted daylight passages from the offshore entrance channel to the mouth of the Neches River.

Based on 1996 traffic levels, the analysis showed that an easement of current meeting restrictions would result in annual savings of $370,000. Vessel safety issues and the cost associated with minimizing potentially dangerous conditions would be addressed during feasibility. The annual benefits for deepening and widening improvements assessed in this reconnaissance for the 50-year project life are estimated to be in excess of $23,000,000.

The costs associated with this scenario are due to the initial new work dredging of approximately 60,690,000 cubic yards of dredged material, the lowering of 65 pipelines, and the raising of 14 upland placement areas. The first year cost for all new work is $260,270,000. This is equivalent to $19,160,000 average annualized cost. It is assumed that the same dredging cycle will continue over the 50-year project life. The average annualized cost for maintenance dredging including levee construction is $2,940,000. The annual costs for deepening and widening improvements assessed in this reconnaissance for the 50-year project life are estimated to be approximately $22,100,000.

The Sabine-Neches Waterway runs through extensive salt marsh wetlands up to the Neches River and brackish to fresh water wetlands along the Neches River. The present navigation project has impacted these wetlands by allowing higher salinity water to migrate upstream in greater volumes than was possible before the project was constructed. Sediments flowing down the Neches River have been collected that would normally have been transported over the river banks to nourish the marshes during floods. Due to a lack of new sediments and land subsidence, the marshes are declining, particularly along the lower Neches River. A deepening project may have additional salinity intrusion impacts on surrounding wetlands. These impacts and associated wave erosion impacts will have to be assessed in any future studies. Widening the channel by 100 feet along the Sabine-Neches Canal may not add to wetland impacts since very little marsh remains in this reach.

The National Environmental Policy Act regulations require coordination with State and Federal resource agencies to minimize adverse impacts to wetlands and other resources of concern. It will also be necessary to identify potential beneficial uses for the new-work material dredged from the channel. Impacts to Federal-listed threatened or endangered species are expected to be minimal. However, sea turtles may be affected by hopper dredge work during offshore project deepening.

Additional surveys will be required to complete the inventory of historic properties that may be affected by the project. It appears that none of the significant Confederate-era sites and shipwrecks in the vicinity of Sabine Pass will be affected by the project as envisioned at this time. Remote-sensing marine surveys of the Sabine-Neches Canal

and the Neches River Channel must be conducted to determine if shipwrecks are present that could be impacted by the proposed new work. Terrestrial impacts to historic properties are expected to be minimal. Upland impacts should be limited to the construction of placement and beneficial use areas, and may require additional surveys.

The navigation channel passes through a highly urbanized area with a large concentration of petrochemical plants and associated industries located along the banks. Hazardous, Toxic, and Radioactive Waste (HTRW) problems exist in the area in the form of several known industrial waste sites and at least one Superfund site near the navigation channel. Due to industrial waste sites and unauthorized waste disposal activities, the probability exists for encountering an unknown waste site during project construction. Therefore, future studies of project impacts will assess current water quality condition, update baseline HTRW information, identify potential waste sites, and assess relative risks for HTRW problems that may be encountered in the project.

The specific land requirements for this project are not yet available, however generally speaking the material from the proposed improvements to the navigation channel will be contained in existing upland placement areas, except in the offshore reach where the material will be removed to open water placement areas. Since many of the existing upland sites were acquired with temporary or revocable easements there is a high probability that a significant number of new permanent easements will be required. Give the industrial development of the project area, real estate acquisition will represent a significant financial commitment on the part of the local sponsor. Along with the acquisition of new easements over the upland sites, the local sponsor will be required to provide access road and dredge pipeline routes to the various sites. Although the mitigation features of the project are presently unknown it is highly likely that mitigation for a project of this scope may require acquisition of a significant amount of land. There are approximately 65 pipelines that will constitute obstructions to the new channel template. Privately owned facilities that are obstructions to federal channels are subject to navigation servitude and to Section 10 permit restrictions. Removal of such obstructions is usually at the owner's expense.

6. FEDERAL INTEREST: This preliminary analysis shows that deepening and widening the Sabine-Neches Waterway has greater benefits than costs. Further study during the Feasibility Phase has the potential to identify additional benefits from various deepening and widening combinations, as well as potential environmental restoration alternatives.

7. PRELIMINARY FINANCIAL ANALYSIS: In a letter dated 26 August 1998 (copy attached), the Jefferson County Navigation District expressed an intent to, "act as local sponsor on this project." The local sponsor has reviewed and accepted this analysis as submitted.

8. RECOMMENDATIONS: Based on these findings, I recommend this analysis be certified as being in accordance with current policy and that the feasibility study be conducted.

9. POTENTIAL ISSUES EFFECTING INITIATION OF FEASIBILITY PHASE: There are no apparent issues at this time that impact on implementation of the feasibility phase.

10. PROJECT AREA MAP: A project area map is enclosed.

Lt. Col. (P) Nicholas J. Buechler
Colonel, Corps of Engineers
District Engineer

2 Enclosures
1. Letter of Support
2. Project Area Map (Figure 1)